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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/775,210

02/11/2004

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EXAMINER

DEPPE, BETSY LEE

ART UNIT

PAPER NUMBER

2611

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/775,210	Applicant(s) KIM, IN-KYOUNG	
	Examiner Betsy L. Deppe	Art Unit 2611	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/23/05;2/8/06</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because:  
in Figure 1, "Uint" in elements 20 and 50 is misspelled; and  
in Figure 3, "Enc ding" should be "Encoding."

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. The claims are objected to because of the following informalities:
  - a. in claim 1, line 1, "apparatus" should be "system";

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- b. in claim 1, the Examiner suggests changing "scheme" on line 4 to "technique" in order to be consistent with the language in claim 1, line 6 and dependent claims (for example, see claim 3, line 3);
- c. in claim 1, line 9, "transmitting side" should be "transmitting unit" (see claim 1, line 5);
- d. in claim 2, line 6, "modulation" should be "modulated";
- e. in claim 5, line 1, "an optimum MCS" should be "the optimum MCS level";
- f. in claim 9, line 2, "a transmitting side" should be "the transmitting unit" (see claim 1, line 5);
- g. in claim 14, line 1, "the steps of" should be inserted after "comprising";
- h. in claim 16, line 1, "modulation step" should be "interleaving and modulating step" (see claim 15, line 3);
- i. in claim 20, line 1, "demodulation" should be "demodulating";
- j. in claim 21, line 2, "a transmitting side" should be "the transmitting side" and
- k. in claim 23, line 2, "a channel" should be "the receiving channel" (see claim 14, line 3).

Appropriate correction is required.

3. Claim 14 is objected to because the elements of the method claim are not recited as steps. The elements of a method claim are steps which should usually be verbal phrases introduced by a gerund or verbal noun (the "-ing" form of a verb). For example,

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the step of lines 2-3 should be "periodically checking state information of a receiving channel and setting an optimum modulation and coding scheme (MCS) level."

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 4, 11-14, 17 and 23 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Paulraj et al. (US Patent No. 6,351,499 cited in the IDS filed February 8, 2006).

6. With regard to claims 1 and 14, Figures 3 and 4 of Paulraj et al. disclose the claimed invention including a modulation and coding scheme setting unit (62); a transmitting unit (50) and a receiving unit (80). (See abstract; column 3, line 43 - column 4, line 25; column 6, line 26 - column 7, line 11; column 7, line 50 - column 67; column 9, line 52 - column 10, line 65)

7. With regard to claims 4 and 17, Paulraj et al. discloses the claimed invention including space time transmit diversity.

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8. With regard to claims 11-13 and 23, Paulraj et al. discloses the invention including a channel information extracting unit (64) and selecting unit (60). (See abstract; column 4, lines 1-25 and column 6, lines 26-49)

9. Claims 1, 2, 4-7, 9-15, 17-19 and 21-23 rejected under 35 U.S.C. 102(e) as being clearly anticipated by Walton et al. (US Patent No. 6,785,341).

10. With regard to claims 1 and 14, Walton et al. discloses the claimed invention including a modulation and coding scheme setting unit ("CSI processor 626"); a transmitting unit (see Figure 2) and a receiving unit (see Figure 7). (See column 6, line 2 - column 7, line 44; column 20, lines 6-34)

11. With regard to claims 2 and 15, Figure 2 of Walton et al. discloses the claimed invention including a first encoding unit (212), a modulation unit (214 and 216), and a second coding unit (120A).

12. With regard to claims 4, 6, 17 and 18, Figure 2 of Walton et al. discloses the claimed invention including space time transmit diversity or selecting transmit diversity since 120A can select one or multiple data streams for transmission through the one or multiple antennas, respectively.

13. With regard to claim 5, Walton et al. discloses the claimed invention including an optimum MCS level for each channel. (See column 6, line 66 - column 7, line 2)

14. With regard to claims 7 and 19, Figure 7 of Walton et al. discloses the claimed invention including a first decoding unit (710), a demodulation unit (712, 714), and a second decoding unit (716).

15. With regard to claims 9 and 21, Walton et al. discloses the claimed invention including operation of the demodulation unit corresponding to a modulation unit of a transmitting side. (See column 20, lines 18-25)
16. With regard to claims 10 and 22, Walton et al. discloses the claimed invention including operation of the second decoding unit corresponding to a first encoding unit of a transmitting side. (See column 20, lines 18-25)
17. With regard to claims 11-13 and 23, Walton et al. discloses the claimed invention including a channel information extracting unit and a selecting unit. (See CSI processor 626 in Figure 6A; column 6, line 66 - column 7, line 44; and column 20, lines 35-49)

***Claim Rejections - 35 USC § 103***

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 3, 8, 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton et al. ('341) as applied to claims 2, 7, 15, and 19, respectively above, and further in view of Foschini et al. (US Patent No. 7,116,722 B2) and Chen et al. (US Patent No. 6,359, 868 B1).
20. With regard to claims 3 and 16, Figure 2 of Walton et al. ('341) discloses the claimed invention including a channel interleaving unit (214) and a mapping unit (216).

However, Walton et al. does not disclose a Walsh modulation unit and a scrambling unit.

Foschini teaches that a diversity transmitter must be spread with a Walsh code and scrambling code in order to comply with a CDMA standard. (See column 11, lines 52-58) Since CDMA techniques facilitate communications in which a large number of system users are present (see Chen et al., column 1, lines 48-52), it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a Walsh modulation/spreading unit and scrambling unit to Walton et al. in order to apply the advantages of Walton et al.'s diversity system for communications in which involve a large number of users.

21. With regard to claims 8 and 20, Figure 7 of Walton et al. discloses a soft-determining unit (712) and a channel interleaving unit (714). Walton et al. does not disclose a descrambling unit and a Walsh demodulation unit. However, since it would be obvious to add a Walsh modulation unit and a scrambling unit to the transmitter (as explained in the rejection of claims 3 and 16), it is inherent/implicit Walton et al. in view of Foschini and Chen et al. also discloses a descrambling unit and a Walsh demodulation unit since it is inherent that the receiver must perform processing complementary to the transmitter's processing in order to accurately recover the transmitted information. (For example, see Walton et al., column 20, lines 18-24)

### ***Conclusion***

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references disclose adaptive diversity systems:


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Sampath et al. (US Patent No. 6,922,445 B1); Walton et al. (US Patent No. 7,095,709 B2); and Jia et al. (US Patent No. 7,103,325 B1).

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (571) 272-3054. The examiner can normally be reached on Monday, Tuesday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Betsy L. Deppe  
Primary Examiner  
Art Unit 2611